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ABSTRACT

After a brief historical review of the development of English polytechnics, focus is on the methodology of a behaviorally referenced student feedback instrument (AID) for determining areas of difficulty. Four possible models for the feedback instrument are cited: three are ruled out. The Instructional Development by Evaluation and Assessment (IDEA) model, developed by the Center for Faculty Evaluation and Development of Kansas State University, was selected for field testing. Problems encountered in adapting the model to the English situation are related including the need to rephrase some questions to increase relevancy and understanding, and the discrepancy between British and American scoring patterns. As work on the project continued it became apparent that there were a number of problems in addition to those already mentioned and foreseen. It was therefore decided to redesign the project, using the concept of IDEA rather than the specific instrument. Among changes instituted were expanding the list from 10 general objectives to 47, and altering the procedure for collecting descriptions of teaching behaviors. Theoretical implications are assessed. (PHR)

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AID; A Teaching Consultancy Backup Service for English Polytechnics

Introduction

The English Polytechnics (not British - they don't exist in Scotland, though there is one each in Wales and Northern Ireland) are institutions of higher education, financed through the public education system, offering a very wide range of courses, by both part and full time study, at levels from senior technicians's certificates to advanced study and research for higher degrees. Most of their teaching work is at undergraduate level (in this they resemble universities), but a substantial proportion is also at professional certificate or diploma level (in this they are quite unlike universities). They usually have a strong emphasis on studies in either technology or business or both, but have since their formal foundation in 1969 expanded much beyond these areas, into almost all the fields of study covered by universities, classics and medicine being perhaps the only notable exception. Many, but not all, now also include former teacher education colleges within their structure: they are often federal or dispersed in nature (Locke, 1977). There is probably no exact equivalent to them outside the United Kingdom, though their nearest equivalent in continental Europe may be the German Technische hochschule, and in America may be the land-grant university.

For the purposes of this paper, the most important thing to notice about these institutions is that they did not just grow. They were deliberately set up, as an act of government policy, by mergers of existing locally funded colleges with substantial higher education provision already in them, and their creation was a deliberate political act (the alternative would have been to create more new universities, with a greater degree of political independence, at least nominally). The document that set out this policy (D.E.S., 1966) also gave the new institutions a clear remit to be primarily teaching institutions, to develop close links with the local community, and to

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emphasise there relevant the practical and interdisciplinary elements in their chosen areas of study. The institutions thus were charged from the outset, quite unlike the charges laid on most British universities in their chapters*, with an official duty to teach well, and this emphasis was continued in such later documents as the Rochester Report (C.N.A.A., 1974), which evaluated the role and nature of research in polytechnics, defining it in much broader terms than had been usual in university circles (to include, for instance, elements related to community service) and linking it firmly to teaching in the now-famous remark "institutions teaching to degree level.....must sustain an adequate level of research, as part of their teaching function" (my italics).

Given this climate of opinion, it is not surprising that units or working parties concerned with educational development and/or research grew up independently in many polytechnics in the period 1969-72, and during 1972-74 there came into existence a national organisation (SCEDSIP - The Standing Conference on Education Development Services in Polytechnics) charged in its constitution with promoting this area of work at a national level. One of the earliest of its concerns, and a continuing one, was the promotion of teaching excellence among polytechnic staff, and the set of aims and objectives for initial training courses developed to that end (Harding, 1973) is still regarded as valid (Seldin, 1977).

Since 1973, however, one area of enquiry to which attention has increasingly been turned is that of what should follow the initial staff training programme. SCEDSIP working parties of which the present author has been convenor initially proposed a two-tier model, in which the initial training programme was followed by further specialised courses (SCEDSIP, 1975), and a national resources package for one such course has now been produced and marketed (de Winter Hebron (ed)., 1976). This however still left untouched the area of response to immediate staff need - i.e., teaching consultancy, and a subsequent report (SCEDSIP 'TICs' Working Party, 1976) proposed the establishment of consultancy services in

* the Open University is an exception to this.

individual institutions, linked with the wider range of existing educational development activities, of which it commented (Sec. 7).

"The general impression to be drawn from all this (survey material from) 23 units in 6 nations) is that units are successful when they show to their potential clients a concern with teaching consultancy as just one aspect of a total concern with improving learning" - The report also commented (Sec. 9)

"It is also, probably, important that enough units or centres operating in different ways exist to allow an individual teaching institution to find, or copy, one that suits its particular academic style."

Centres were, then, envisaged as national in scope, but plural, and inter-available to their clients and client institutions, offering a range of different "ways of operating" - that is, different methods of diagnosis and patterns of consultancy over clients' teaching problems. It was clear that each method of diagnosis would require the development of appropriate diagnostic tools, and work on this has gone on within SCEDSIP since 1976 in three main areas: live-teaching VTR (Tribe, 1977), cognitive matching by repertory grid analysis (Keen & Heywood, 1976), and the development of a behaviourally referenced student feedback instrument ("AID") for determining areas of individual difficulty. The remainder of this paper will concentrate on the dynamics and methodology of developing this latter instrument, work on which is still in progress.

Available Models

There were of course many available models to choose from in developing such a feedback instrument, and four were examined in some detail: TABS, developed by the Clinic to improve University Teaching at the University of Massachusetts, SIR, developed by Educational Testing Services, Princeton, IDEA, developed by the Centre for Faculty Evaluation and Development, Kansas State University, and, nearer home, the student feedback questionnaire developed at N.E. London Polytechnic.

Of these four models, the first two were found to present serious methodological problems. TABS, for example, "asked students to rate their

instructor's performance of each teaching behaviour (so as to select one of four responses which reflected their beliefs about how much improvement was needed in the instructor's performance of the teaching belaviour described" (my italics) (Melnik, 1975), and the data analysis procedure included the instruction "comparate the instructor's Self-Assessment to students' actual responses on TABS items" (C.I.U.T., 1974). Here, the central problem is, that no criteria for "needing improvement" are defined except (covertly) that of consumer satisfaction - an attitude which is overtly expressed in early discussions of SIR:

"Currently, student ratings are being used primarily for two purposes. The most common is to produce information for instructors . . . . The second purpose is to gather information to help students select courses to take . . ." (Centra, 1972)

- though in later work on this model it is modified somewhat:

"The assumption is that the ratings generally reflect student judgment about what the teacher does in the course" (Centra and Creech, 1976)

and in item 39 of SIR the basis of judgment by the students is given as: "Compared to other instructors you have had . . . how effective has the instructor been in this course?" (my italics)

'Effectiveness', for questionnaires of this type, is thus defined as 'not being in need of improvement' and this in turn is defined in terms, overt or covert, of consumer choice satisfaction. But no objective basis is established against which to measure the nature of that satisfaction, or the effects (other than producing that unmeasured satisfaction) of the teaching concerned, and Centra and Creech (op.cit.) admit as much:

"The possibility exists that ratings . . . may be influenced by specific characteristics of the students, teachers, or courses that have little to do with actual teacher performance or course effectiveness."

Thus we now, it appears, have a distinction between 'effective teaching' (satisfying consumer demand) and 'actual course effectiveness' (some other criterion, perhaps of student learning?). I do not wish to pursue this matter further, or denigrate the very important work done by Dr. Centra, but clearly

results: they say what the students say they think: but what then? In a situation where students do actually choose among a cafeteria selection of courses, such a consumer - oriented instrument may have its uses, as a sort of market research tool. But this particular situation - apart from on some very large modular courses - hardly obtains in English higher education.

Attention then turned to the English model, and here again problems appeared. The NELP model had two important advantages: it asked students to rate how far they agreed or disagreed with objectively phrased statements about the lecturer's classroom behaviour (e.g. "Is clear and understandable in his or her explanations"), and it also attempted to deal with at least one of the extraneous factors mentioned by Centra and Creech, in asking the students to rate how important they thought each behaviour was for their courses (Bradbury and Ramsden, 1975a). This work did provide some interesting and potentially important data about discipline - vectored differences in student expectations of lecturers' teaching (Ramsden, 1975b), but the methodological problem of defining 'effective teaching' had again been avoided rather than solved: what the NELP questionnaire measured, once more, was ultimately consumer satisfaction, described in terms of the fulfilment of expectation - a sort of social contract which essentially could only reinforce existing expectations, even though it might result in new teacher behaviour. *

Attention then turned to IDEA, which was radically different from the other systems.

The IDEA Model

IDEA ("Instructional Development by Evaluation and Assessment") operated, so its originators claimed (Hoyt, 1973a and 1973b), on the basis of a series of

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* To be fair, Centra & Creech attempt to meet this problem by including as specific instrument items only statements about those behaviours that previous research suggests correlate with effective student learning. But this still leaves two problems unresolved: (a) can we be certain the items in SIR, as understood by the students, actually do correspond with the previous research findings as understood by the researchers? (about which they are duly cautious), and (b) in any case, there is still no measure of what different students mean by 'in need of improvement'.

definitions, which can best be summarized as follows:

(1) 'Effective teaching' may be defined as that which results in, or correlates with successful student learning (Note: this definition does not imply that teaching necessarily causes learning, thus avoiding the first of the conceptual traps discussed in Johnson, Rhodes and Rumery, 1976)

(2) One of the factors most closely conducive to successful student learning is the student's sense of his or her own satisfactory progress (there is considerable evidence for this from a variety of sources).

(3) Hence how effective the teaching is may be measured in terms of the student's perception of his own progress in that teacher's courses.

(4) Teaching, however, is also intentional: teachers have purposes - to assist the students to learn about certain things in certain ways: in brief, objectives. To be meaningful, therefore, the progress perceived must be that towards the objectives chosen by the teacher.

(5) Teaching is also a set of behaviours, in the frequency or completeness of each of which individual teachers vary. What teaching it is that is how effective, therefore, can be defined in terms of what teaching behaviours the students perceive the teacher to perform how often or how completely.

(6) Finally, like any other kind of statistical data, data about student perceptions of progress and student perceptions of behaviours is amenable to the laws governing all statements of tendency, provided that the population is sufficiently large. Thus, specific behaviours and specific progresses, given a large enough population.* may be tested for correlations and thus provide diagnosis of particular teaching behaviours to be changed or continued.

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* defined for correlation purposes as 6,000 student responses and for norming as 25,000 (Biles, 1976)

The system was thus deliberately designed (like TABS) as the diagnostic input to a teaching consultancy service. It required a national data base to be effective, but not one impossible of meeting from among 31 polytechnics, each with over 5000 students. And it was already tested for validity and reliability on an American population of almost 2 million responses, and for effectiveness as an agent of teaching improvement on two test-retest studies totalling over 600 staff members, with positive results (Hoyt, 1975; Caskin, 1976).

In July 1976, the author met Dr. Biles, the Director of CFED, at the second IUT Conference at Heidelberg: Dr. Biles was interested in the possibility of a large-scale test of IDEA in another English-speaking country, in parallel to the Exxon project for enlarging its scope to include American community colleges, and it was agreed to submit a proposal for funds to the Kellogg Foundation. During the Autumn of 1976, plans went ahead to interest individual polytechnics represented in SCEDSIP in taking part in the project, and as part of these plans, a small-scale trial of the American instrument and correlation programme was made with six classes taught by two teachers whose abilities were already well documented, totalling 150 students, at Newcastle Polytechnic. In the event, the proposal to the Kellogg Foundation was unsuccesful (on economic, not academic grounds); but by this time sufficient interest had been aroused in the project to make it appropriate to continue investigation.

Adapting IDEA to the English situation.

Rather more initial difficulty however was experienced in adapting IDEA to the English situation than had been expected. It has been expected that the small-scale trial would show a) that the instrument would be a practical one to administer b) that the questions would need some superficial re-wording, but not much other alteration and c) that British and American scoring (and therefore norm) patterns would be similar.

In the event, only a) was completely confirmed - the instrument took about 15 minutes to administer, could be fitted quite well into the end of a class period, could be easily administered to full-time groups of all sizes from 4 - 55 students (though some minor administrative problems arose in attempting to

use it with a part-time group) and, perhaps important, generated considerable enthusiasm among the students themselves.

Of the other two hypotheses, b) at first also appeared largely confirmed - students needed assistance with some phraseology, and found some questions couched in irrelevant or unfamiliar terms, or difficult to fit to the British situation, but it seemed at that time likely, that problems of local-fit of this kind could be overcome by "translating" the instrument, and omitting apparently irrelevant questions (or using standard additional/alternative questions provided).

Hypothesis c) was not confirmed at all, however. A careful comparison of score distributions from these 150 students with comparison printouts and (where printed) with comparative USA norms, demonstrated a steady discrepancy between British and American scoring patterns, with the USA norm sufficiently higher to result in British scores with a substantial spread above 3 on a 5-point scale being comparison-rated about one class lower than one would expect from first principles

(eg - mean score 3.1 - rating Low Average (expected Average)
mean score 4.3 - rating High Average (expected High)
mean score 3.8 - rating Average (expected High Average)
mean score 2.9 - rating Low (expected Low Average))

This tendency was observable throughout the instrument, and in results from both teachers: it was observable in 84 score distributions out of 234 in all, and the actual pattern and distribution of student scoring in both cases resembled that of British students in other questionnaires, including questionnaires to do with course analysis which did not ask about individual teachers. (de Winter Hebron, 1976b). It is therefore likely that these patterns represent characteristic ways of scoring by British students possibly related to semantic differences in interpreting the word 'average' between the two groups.

In addition, by March/April 1977, certain methodological and statistical problems had been recognised, or closer analysis of the final results themselves together with additional norm material supplied from USA. These may be summarized as follows:

(1) Increasing documentary evidence existed from other studies of the cultural difficulty in effectively transposing a given specific instrument (as distinct from the concept behind that instrument) from USA to UK use. (Flood Page, 1974; de Winter Hebron 1978)

(2) There was also increasing evidence that the instrument rewording proposed for Phase 1 could not be undertaken without endangering the validity of the instrument unless it was preceded by a carefully constructed 'test of meaning' experiment, which would again increase both timescale and cost.

(3) In discussion the initial trial UK printouts proved statistically unsatisfactory in five ways (in addition to the norm discrepancy already discussed):

(a) A substantial proportion of the lines were in bimodal distribution (this seemed to be true of British scores on other instruments too). The IDEA printout did not normalise these scores, and the accompanying literature gave what seemed good reasons for this (to do with distorting evidence of individual class characteristics), but neither did the programme provide for taking chi-squared and comparing for norm purposes only statistically comparable sub-groups and lines. It was felt that it should have done one or the other.

(b) Where differences in responses to teaching behaviour from a similar class mean were identified for diagnostic purposes as 'strength' or 'weakness', these differences were not tested for significance before verbal translation, but only for instrumental error. Properly, it was felt, significance tests should also have been part of the programme.

(c) The programme standarised all lines to base 100 (i.e. printed percentages), which for small classes if reported without raw score information could be misleading (and for some operations might be statistically improper). The IDEA literature stated this was done for class comparison purposes, but possibly raw score data should be available as well on the printout.

(d) The programme throughout used the mean as its major reference measure; it was at least arguable that a better measure would be the median, since this was less susceptible to random individual abnormalities of score. (The author was able to discuss this point with Dr. Biles, who indicated that the mean had been chosen as the American reference measure largely because more users of the system understood it than understood the median).*

(e) The programme had no way of printing out the nature of line distributions (right skew, left skew, bimodal) either absolutely or compared with total databank population or subpopulation distributions, or alternatively the inter-quartile range. It was suggested one or both of these measures might be of value.

(Points a) to c) are clearly the most important)

It seemed that the only logical way of dealing with these problems, therefore, was to redesign the project, to involve the transposing to Britain not of IDEA's specific instruments and programme, but of the concept of IDEA, which had already proved effective in USA and which, as has already been discussed, had a number of features which clearly mark it out among behavioural systems/concepts as one of the most appropriate to the British situation.

*In fact, the original proposals (Hoyt 1973a) proposed reference to the "average", without stating precisely which measure was intended.

Development of the English instrument would, therefore, involve collecting data for a new questionnaire, and designing a different programme (or series of programmes) for norming and correlation. The finished product would thus be different from IDEA in all particulars except the central concept, and a new name - AID ("Assessment for Instructional Development") was therefore selected for it. Development of the instrument was given the go-ahead at the May 1977 SCEDSIP conference.

Initial Stages in the AID Project.

The period since May 1977 has been occupied primarily in designing and administering data collection instruments for staff objectives and student descriptions of attitudes to courses and of teacher behaviour. In designing these instruments, an important break was made with the methodology of the original IDEA development, and this requires some explanation as it is not included among the points discussed in the last section.

The original IDEA research on staff objectives (Hoyt, 1973a) examined the possibilities of basing these on the taxonomies of Bloom and Krathwohl, or the shorter Deshpande-Webb factor analysis reduction of these, but eventually settled for putting ideas based on these to Kansas State University faculty members who had previously won outstanding teaching awards and to student-faculty committees on effective instruction at three Kansas State University colleges, and using them as a jury of experts to generate a short list of eight general objectives (later enlarged to ten). This appeared suspect on two grounds: the smallness and institutional bias of the sample of staff opinion, and the assumption that this small list of general objectives would be consistently comprehensible and consistently relevant across all disciplines. The present research, therefore, makes use of a more elaborate list of 47 objectives, derived from the prime behavioural verbs in each cell of the Bristol adaptation of Bloom and Krathwohl (Whitlow, 1975), and covering all three domains (psycho-motor included), to be rated for importance to the lecturer's teaching on a scale from 1 to 5, by a discipline

balanced sample of lecturers from 14 institutions of higher education throughout the United Kingdom. One of the objects of the research will be to discover any significant differences there may be between responses by staff of different disciplines: the criterion for inclusion of an item in the eventual diagnostic instrument will be, simply, frequency of selection as important by a statistically valid sample of staff in the discipline concerned.

Similarly, the original procedure for collecting description of teaching behaviours (Biles, 1976) was felt to be biased. It asked students to describe behaviours that caused them to think that the lecturer concerned was "an outstandingly good teacher" or "an outstandingly bad teacher": these descriptions were then to be adjudicated, as in normal Thurlstone procedures, by a jury of experts. Leaving aside the difficulty of deciding who could properly be a jury of experts for such a list, this procedure seemed improper on two grounds: that both at the collection and at the adjudication stage, multiple arbitrary notions of 'good' and 'bad' were introduced into the selection criteria, although in fact it was the object of the correlation analyses to find out precisely these: 'good' in this system being equivalent to 'correlating, for high scores, with high scores on perceived progress towards relevant objectives' and 'bad' being equivalent to 'correlating similarly with low progress scores'. New collection forms have therefore been designed, which do not lead the student in any way, but simply ask him or her to describe "what teachers of his course or subject typically do" (glossed "in class, while teaching"). Again, the ultimate selection for inclusion in the developed diagnostic instrument will be on the basis of statistical evidence of significant correlation (high or low) of behaviours with perceived progress; those behaviours that do not discriminate in this way will be rejected, but all behaviours described by a significant proportion of the sample will be tested in this way, whether 'good' or 'bad' in terms of received wisdom or not.

At present, the collection instruments are being returned, and analysis programmes are being designed. By the time of the FARDHE conference, however, initial results may well be available.

Conclusion : Theoretical Implications.

Finally, certain theoretical implications of the methodology and dynamics outlined in this paper need to be discussed. The preceding paragraphs describe a study which appears essentially "atheoretical" in character, in that the laws of statistics are allowed to operate on data collected in as value-free a manner as possible, to attempt to ensure that no personal opinions of researchers or participants intrude into the results of analysis. Objections may be raised that such procedures are of doubtful validity because they could be lacking in ability to discriminate between classes of data being analysed, for which at least a classification theory is needed. The present author however believes that these objections are grounded in a basic misunderstanding of the situation over the development of scientific approaches to the study of human behaviour. The procedures described above in fact follow a five-stage inductive paradigm, clearly articulated, and rooted in theories of knowledge.

The stages of the paradigm are:

(1) Observations, conducted according to consistent criteria $\alpha_{1....n}$ (these criteria embrace existing theories governing a) the nature of observation b) the nature of, and rules for, the interpretation of results).

(2) (Synchronous with 1) : Hypothesis :
There exist data such that subgroups and relationships can be meaningfully distinguished in terms of criteria $\beta_{1....n}$ (these criteria embract already existing schemes of classification for categories of perception, relation etc.).

(3) Process (1) to test (2).

(4) (4.1) If (2) not confirmed (a) are there any significant distinctions? (criteria α)
(b) analyse to look for new factors/classes (criteria β)

(4.2) If (2) confirmed
OR
If (4.1a) is YES
and (4.1b) produces valid classes
} Formulate hypotheses regarding reasons for/ nature of relationships uncovered. (criteria $y_{1....n}$ -I.B. These are new)

(5) Devise procedures to test hypotheses (4.2)

Etc.

The "mistakes" of the potential objectors lie, therefore, either in looking, too early in the process, for new theoretical constructs (criteria y in the paradigm), which exist within the paradigm but are not generated until stage 4.2, or alternatively in omitting to look during these early stages of the process for theoretical constructs in the philosophical areas designated criteria α and β.

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